

# ALBA 815 ALL-WAVE SUPERHET FIVE

**CIRCUIT.**—The aerial is coupled to the grid of V1, a triode-hexode frequency-changer, by a set of inductively coupled band-pass coils on the medium and long wavebands and via an H.F. transformer on the short waves. The M.W. and L.W. oscillator coils are of iron core construction, whilst the S.W. oscillator coils are of the usual air-core type.

The signal passes by an I.F. transformer to V2, an H.F. pentode, the I.F. amplifier of the receiver. This valve also acts as an L.F. amplifier when the set is being used for gramophone reproduction.

By a switching arrangement the next stage is cut out on gramophone and V2 is resistance capacity coupled to the output valve V4. R8 and C4 are the anode load and coupling condenser respectively.

The output of V2, when working on radio, passes to the demodulating diode of V3, a double diode valve. The other diode provides a D.C. potential that provides the A.V.C. voltage.

The coupling arrangements to V4, an output pentode, include a manual volume control. A pentode compensator condenser is connected between the anode of V4 and the earth line.

Mains equipment consists of the mains transformer, full-wave rectifying valve, V5, electrolytic smoothing condensers, and a smoothing choke consisting of the speaker field energising-coil.

**Chassis Removal.**—The back of the cabinet is held by two sliding clips. The three control knobs on the front are of the grub-screw fixing type. Turn the cabinet on its side and remove the four fixing bolts and washers.

The speaker can be removed if desired (it is secured by four bolts) or, alternatively, the leads to the speaker transformer can be unsoldered. For the reverse process the following connections may be noted:—

With the cabinet in its usual upright

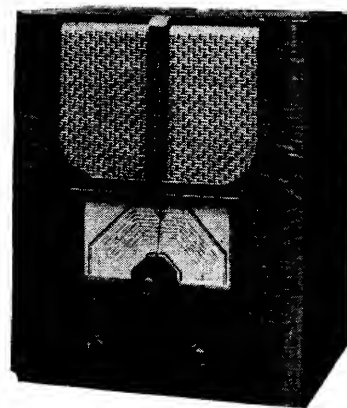
position, the red lead of the cable is connected to the lowest tag and to the one above it; the black and blue leads are connected to the remaining two tags respectively, the blue going to the top tag. The white is soldered to a tag on the speaker frame.

**Special Notes.**—There are two dial lights in the receiver located one each side of the wavelength dial assembly. They are Osram bulbs rated at 6.2 volts .3 amp.

Two terminals are provided on the internal speaker transformer to enable an external speaker to be operated. This should be a high-impedance permanent-magnet moving-coil type.

Provision is made at the rear of the chassis for a wander plug to fit into the aerial socket of the set to enable the mains wiring to be used as an aerial. When the wander plug is not used it fits into one of the earth sockets of the receiver (of which there are two) thereby giving the effect of a mains suppressor condenser.

A pair of sockets at the rear of the chassis enables a pick-up to be connected.



The Alba 815 A.C., by A. J. Balcombe, Ltd., is a four-valve plus rectifier superhet containing three wavebands, and selling at 10 gns.

The makers state that a pick-up of the crystal type should be used. R8, C7 and C14 are incorporated only in the radio-gram chassis.

## Circuit Alignment Notes

**I.F. Circuits.**—Connect a service oscillator between the top grid cap of V1 and chassis and an output meter across the primary of the speaker transformer. Switch the set to medium waves and fully engage the vanes of the gang condenser. Set the volume control of the receiver to the maximum position.

Tune the oscillator to 117.5 kc. and ad-

## QUICK TESTS

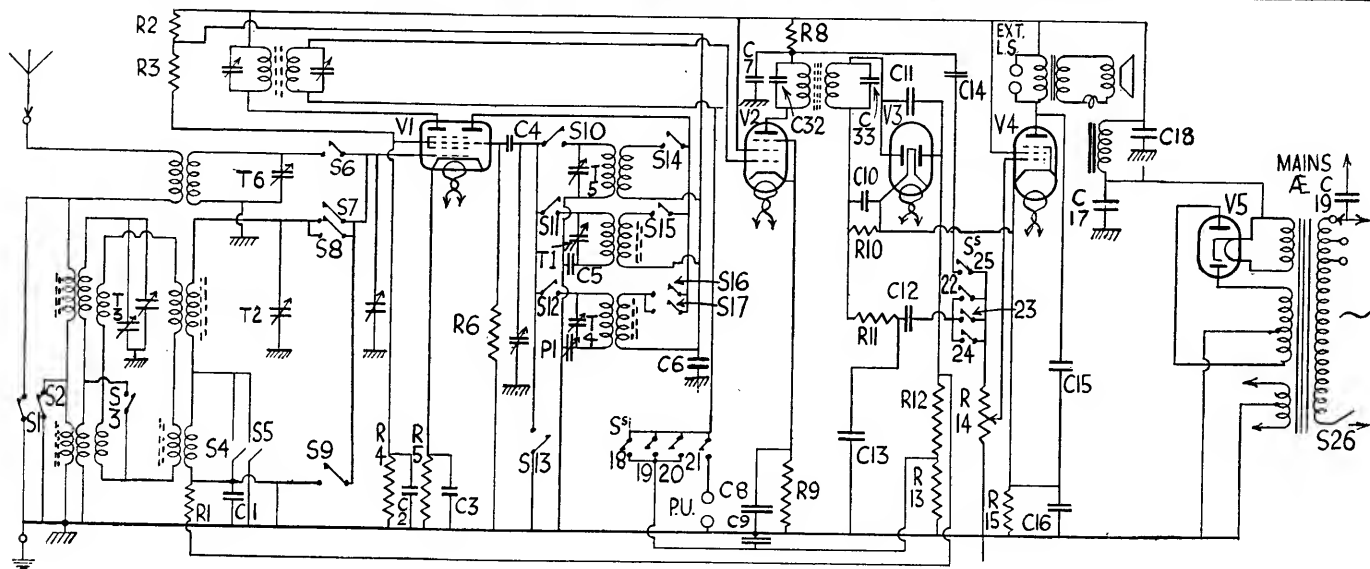
Quick tests are available on this receiver on the leads to the speaker transformer. Volts measured between these and the chassis should be:—

Blue lead, 329 volts, unsmoothed H.T.  
Black lead, 219 volts, smoothed H.T.  
Red lead, 235 volts, smoothed H.T.

## VALVE READINGS

Volume control maximum. No signal. 200 volts A.C. mains.

V.	Type.	Electrode.	Volts.	Ma.
1	(All Mullard) TH4 met. (7)	Anode .. Osc.anode .. Screen ..	235 89 40	2 4.5 3
2	VP4B met. (7)	Anode .. Screen ..	235 235	10.9 4
3	2D4A met. (5)	Diodes .. only.	—	—
4	Pen A4 (7) ..	Anode .. Screen ..	220 235	36 6.2
5	1W4/350 ..	Filaments	329	—



This theoretical circuit diagram of the Alba 815 shows that it follows orthodox lines. Iron core coils are used for all tuned circuits except the short wave.

just the trimmers of the I.F. transformers (starting with the second) for maximum response. Reduce the input from the service oscillator as the circuits come into line to render the A.V.C. inoperative.

**Signal Circuits.**—Leave the output meter connected as before but feed the oscillator into the aerial and earth sockets of the receiver. Only inject sufficient input from the oscillator to obtain reliable peaks in the output meter so as to render the A.V.C. inoperative.

Set the pointer so that it is horizontal when the gang is at maximum.

**Medium Waves.**—Tune the set and oscillator to 250 metres (1,200 kc.) and adjust T1, T2 and T3 respectively for maximum.

The medium wave padding is fixed.

**Long Waves.**—Tune the set and oscillator to 1,200 metres (250 kc.) and adjust T4 for maximum response, simultaneously rocking the gang to ensure optimum results.

Tune the set and oscillator to 1,900 metres (157.9 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

**Short Waves.**—Tune the set and oscillator to 20 metres (15 mc.) and adjust T5 and T6 respectively, using the peak obtained with the trimmer T5 nearest to its minimum capacity position.

The short wave padding is fixed.

### Replacement Condensers

Two exact replacement condensers for the 815 A.C. by A. J. Balcombe, Ltd., are produced by A. H. Hunt, Ltd., of Garratt Lane, Wandsworth, London, S.W.18.

These are: for block containing C17 and C18, unit list number 3764, price 5s. 6d.; for C16, unit number 2918, price 1s. 9d.

### Unusual Volume Control Fault

HERE is a curious trouble experienced in an A.C. superhet brought in for overhaul recently.

The customer complained that when the volume control was turned up on weak signals the programme was cut right out. No trouble was experienced, however, on local stations and on strong foreign transmissions.

When the set was examined on the service bench it was noticed that as the volume control was rotated to maximum the anode current taken by the frequency changer valve fell from 3.5 to 1 ma. The trouble was eventually found to be due to the fact that the screen current for both the intermediate frequency and frequency changer valves was provided from a common feed potentiometer.

The volume control varied the bias on

## Alba 815 on Test

**MODEL 815A.C.**—For A.C. mains operation, 195-250 volts, 40-100 cycles. Price 9 gns.

**DESCRIPTION.**—Three-waveband, five-valve, including rectifier, table model superhet.

**FEATURES.**—Full-vision scale with wave and name calibration. Controls for tuning, volume and wave selection. Sockets for pick-up and extension speaker. Optional mains aerial.

**LOADING.**—63 watts.

### Selectivity and Sensitivity

**SHORT WAVES** (16.5-50 metres).—Excellent gain and average selectivity.

**MEDIUM WAVES** (200-550 metres).—Excellent gain and good selectivity, well maintained. Noticeable second channel. Weak stations received in daylight. Local station spread normal.

**LONG WAVES** (700-2,000 metres).—Excellent gain and good selectivity. Overlap on Deutschlandsender.

### Acoustic Output

Representative balanced output for a pentode, with crispness and good low-note radiation. Only slight colouration on speech.

### CONDENSERS

C.	Purpose.	Mfds.
1	V1 A.V.C. decoupling ..	.1
2	V1 screen decoupling ..	.1
3	V1 cathode shunt ..	.1
4	Osc. grid ..	.0001
5	M.W. fixed paddler ..	.002
6	Osc. anode decoupling ..	.1
7	V2 anode decoupling ..	.002
8	V2 cathode shunt ..	.1
9	V2 A.V.C. decoupling ..	.1
10	H.F. by-pass ..	.00025
11	A.V.C. diode coupling ..	.00025
12	L.F. coupling ..	.005
13	H.F. by-pass ..	.00025
14	L.F. coupling (gram. only) ..	.005
15	Pentode compensator ..	.005
16	V4 cathode shunt ..	25
17	H.T. smoothing ..	6
18	H.T. smoothing ..	6
19	Mains aerial ..	.00025

### RESISTANCES

R.	Purpose.	Ohms.
1	V1 A.V.C. decoupling ..	1 meg.
2	Osc. anode decoupling ..	13,000
3	V1 screen pot. (part) ..	10,000
4	V1 screen pot. (part) ..	25,000
5	V1 cathode bias ..	200
6	Osc. grid leak ..	25,000
7	Regeneration modifier (S.W.) ..	100
8	V2 anode H.F. decoupling and anode load L.F. ..	5,000
9	V2 cathode bias ..	150
10	Demodulating diode load ..	500,000
11	H.F. stopper ..	50,000
12	A.V.C. diode load (part) ..	500,000
13	A.V.C. diode load (part) ..	500,000
14	Volume control ..	500,000
15	V4 cathode bias ..	150
	Field coil ..	2,000

the I.F. valve, and as the bias became less the screen voltage dropped, causing the valve to stop oscillating.

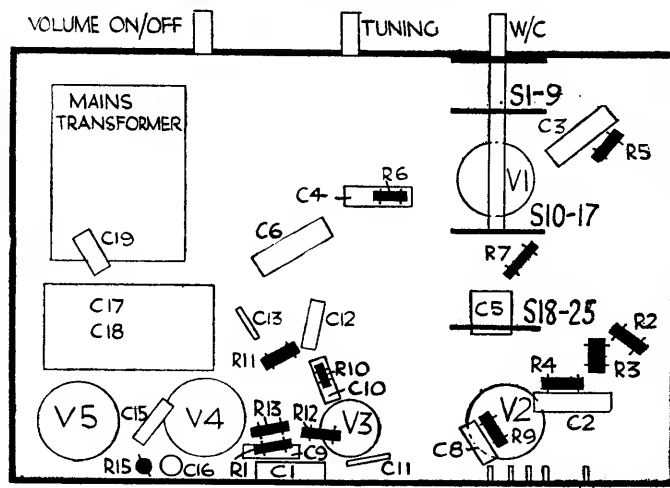
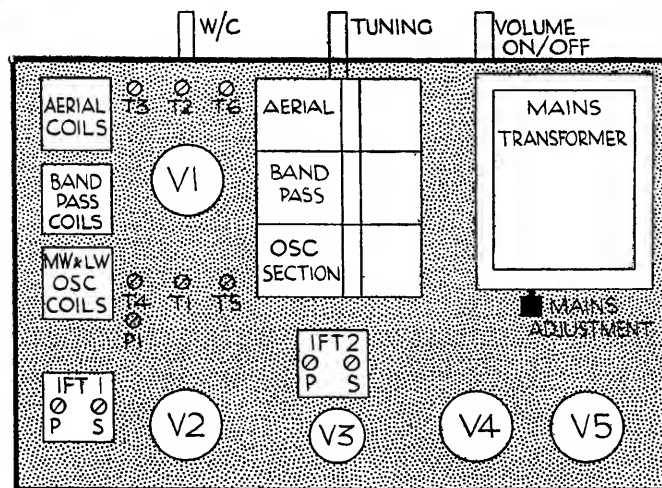
Cure for the trouble was the fitting of a separate screen potentiometer feed for the frequency changer valve.

N. A. HOUGH.

### Distorted Output

A RECENT complaint investigated was of distortion on heavy passages of music while reproduction of speech was quite normal.

After various tests, including those for speaker, it was found that the bias decoupling condenser for the output stage was faulty. Replacement by one of the correct value immediately restored reproduction to standard.



Trimmers of the 815 are accessible from above (see top of chassis diagram on left), and the underside (right) is particularly clean.